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ABSTRACT

The Kentucky Department of Fish and Wildlife Resources is charged with the responsibility to preserve, protect, and perpetuate the fish and wildlife in Kentucky. Involved in this broad program are a number of services, including the Wildlife Conservation Education Program. During the months of September through April, Conservation Club leaders visit almost every 5th and 6th grade student in Kentucky schools, presenting a monthly program on various wildlife resource topics. These programs include interesting activities and facts on resources such as Kentucky snakes, birds, fish, and other animals. A series of teacher's guides have been developed to accompany each monthly topic. Snakes is one of the supplementary activity guides in the series to be used as enrichment material before and after the visit by a Conservation Club Leader. General facts about snakes, information on poisonous snakes, descriptions of Kentucky snakes, and activities (stories, poems, crosswords, bookmarks/mobiles, and others) are presented. (Author/JN)

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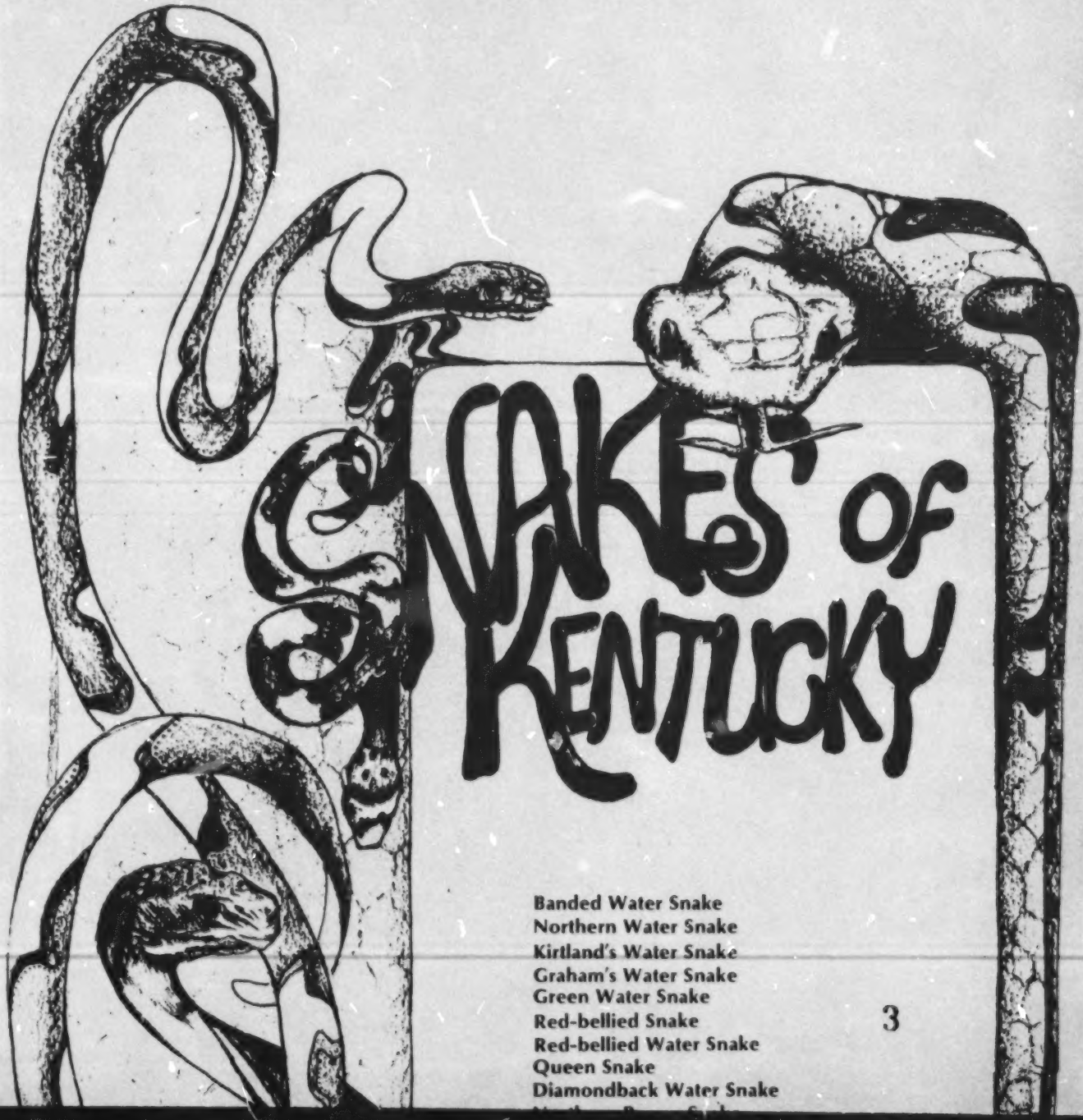


Banded Water Snake
Northern Water Snake
Kirtland's Water Snake
Graham's Water Snake
Green Water Snake
Red-bellied Snake
Red-bellied Water Snake
Queen Snake
Diamondback Water Snake

SNAKES

A Conservation Education Program of the Kentucky Department of Fish and Wildlife Resources

In cooperation with:
The Kentucky Department of Education
Raymond Barber, Superintendent

Written by:
Kelly Hubbard
Nancy Theiss

Illustrations: Barbara Christensen
Design and layout: Gail M. Watkins
Consultant: Tom Fuller

Cost of printing paid with state funds.

FOREWORD

The Kentucky Department of Fish and Wildlife Resources is charged with the responsibility to preserve, protect, and perpetuate the fish and wildlife in Kentucky. Involved in this broad program are a number of services, one of which is the Wildlife Conservation Education Program.

Since 1945 the Wildlife Conservation Education Program has reached the youth of Kentucky through summer camp programs and clubs. During the months of September thru April, 19 Conservation Club Leaders visit almost every 5th and 6th grade student in Kentucky schools, presenting a monthly program on various wildlife resource topics. These programs include interesting activities and facts on resources such as Kentucky snakes, birds, fish, mammals, etc.

With this in mind the Kentucky Department of Fish and Wildlife Resources and the Kentucky Department of Education decided to develop a series of teacher's guides to accompany each monthly topic. SNAKES is one of the series of these guides. SNAKES like the other guides can be obtained through one of the 19 Conservation Club Leaders or by writing:

Kelly Hubbard
Ky. Dept. of Fish and Wildlife Resources
No. 1 Game Farm Road
Frankfort, KY 40601

SNAKES is a supplementary classroom activity guide to be used as an enrichment material before and after the visit by the Conservation Club Leader.

SNAKE INFO AND FACTS

WHAT GOOD IS A SNAKE?

Doctors can use venom from poisonous snakes to make medicine. Chemicals called enzymes make up these venoms. Working together, enzymes attack nerves, blood or muscles in the victim's body. Scientists using special machines can separate these enzymes. Once separated they can be used to fight disease.

Cobroxin, taken from cobra venom, is a painkiller used to treat hemophilia. Hemophilia is a disease where one's blood will not clot. This venom makes it clot.

Snakes play an important part in the control of rodents, insects and pests that destroy crops, food and spread disease.

WHERE DO YOU FIND SNAKES?

Snakes are easiest to find in the Spring near their denning area; copperheads and rattlers lie in crevices among rocks or in the deserted burrows of woodcocks, mushrats and rats. Snakes are sensitive to vibrations, not sounds. Small snakes are found under loose leaves, fallen branches and rotten logs. Large snakes can be found in woodpiles, rock crevices, under tar paper and tin and in grain or corn bins.

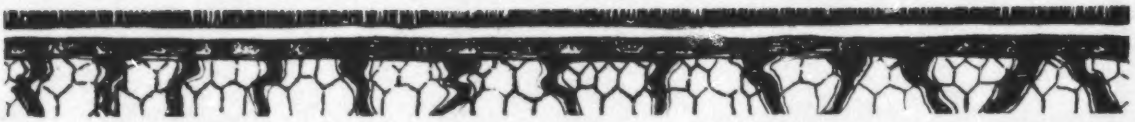
Snakes are usually most active in warm weather (over 60 degrees Farenheit) on sunshiny days.

A CAPTIVE SNAKE

Never attempt to capture any snake before it has been identified by a competent person. Even then use all caution to avoid being bitten.

It is always best to leave all wild animals ALONE-in the comforts of their own home and habitat. Very few animals can survive in human captivity. If you happen to come across an injured or "misplaced" snake then the following instructions are good for temporary care. When you release the snake back into the wild, be sure to find an area which would be suitable for it's home.

All snakes need to be kept warm and dry. None can stand prolonged exposure to moisture; they develop fungal and bacterial infections which will kill them. The snake is best suited in a clean aquarium with some type of cloth or soft wire top. A hard wire will result in your snake's rubbing his nose raw, where it will bleed and become infected. Small species-deKay's red-bellied snake and garter snake **do well at room** temperature and will usually eat worms. Others with no great temperature needs are: ring-necked (eats salamanders), green (eats spiders and insects), hognose (eats toads), ribbon (eats frogs and salamanders), and the king or milksnake (eats young mice). As a rule of thumb, the bigger the snake the more heat it needs. Black racers and water snakes need to be able to bask at 85 to 95 **degrees Farenheit.** The black racer is usually very nervous and makes a miserable captive. Some eat mice, frogs, fish, etc. but many will not eat in captivity at all. Water snakes often do very well. All the water they need is a bowl to drink from. They are just as prone to moisture born diseases as any, and maybe more so. Water snakes eat frogs and fish.



SNAKE FACTS

* Snakes have been observed to trap and hold one or more live prey (in in addition to the one held in their mouth), by pinning the prey against a stationary object. Then these prey animals are successively killed and eaten. This is a frequent maneuver employed by pine snakes.

* **Copperhead and cottonmouth snakes, when they first hatch, hide under brush and stick their tails out. Their tails resemble a worm and they wiggle them to attract prey.**

REPTILE RECORDS

The following are world record facts on reptiles. See if you can convert the measurements from the standard system to the metric system.

* The largest reptile is the **saltwater crocodile-**
  Length 14 to 16 feet or _____ meters.

* The longest snake ever recorded is the **reticulated python-**
  Length 20 feet or _____ meters.

* The longest venomous snake recorded is the **king cobra-**
  Length 13 feet or _____ meters.
  Weight 15 pounds or _____ kilograms.

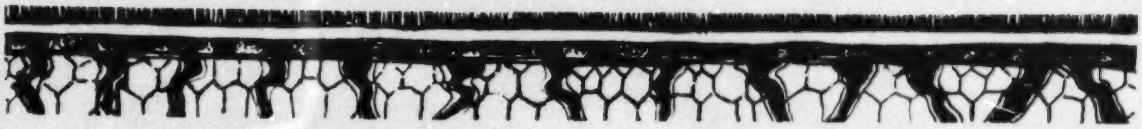
* The shortest snake in the world is the **rare thread snake-**
  Length 4½ inches or _____ meters.

* The largest animal on record to be swallowed by a snake was a 13 pound or _____ kg impala. Which was removed from a 16 foot or _____ meter African rock python. impala.

SNAKE FACTS

INSIDES OUT!

- Snakes are covered with scales that grow upward and backward. Periodically a new set of scales form beneath the old and the old scales are shed.
- The tongue serves solely as a sensory receptor and does not help manipulate food. The flickering two-pronged tongue picks up chemical particles from the air. When the tongue slides back into the mouth, it's tips are inserted into openings of the roof of the mouth. These openings lead to the Jacobson's Organ. This organ is the snakes "smell" organ and helps the snake to recognize prey, enemies or potential mates.
- Snakes lack a middle ear cavity. The bones that carry sound vibrations connect with jaw bones and it is through these the snake hears.
- Snakes are able to swallow large prey because the two halves of the lower jaw are not fused together but connected by ligaments. Each half of the upper and lower jaw can move independent of each other. The muscles in the throat and esophagus push food downward. The teeth are curved back toward the throat to aid in swallowing. The esophagus is gathered into folds to permit expansion during swallowing. The stomach is long and spindle-shaped. Digestion is a very slow process. It may take several days for the digestive juices of the stomach to dissolve the prey.
- Snakes do not have eyelids. A transparent covering called the brille covers the eye and keeps it moist.
- The snake's skeleton consists of a skull, vertebral column and ribs.
- The number of ribs in snakes ranges from 141 to 435 ribs.
- Young snakes hatch from eggs which are laid or which may hatch inside the female snake. All young usually hatch in the Spring. Some snakes have been known to coil about their incubating eggs. Other snakes are known to guard their eggs.



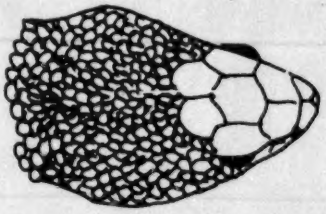
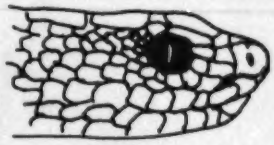
SNAKE FACTS

POISONOUS SNAKES

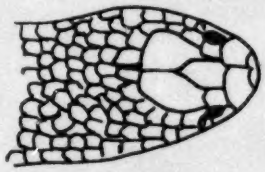
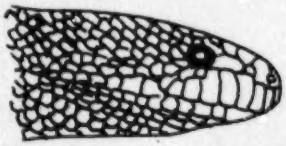
Poisonous snakes in Kentucky can be identified in 4 simple ways:

HEADS

- The head of a poisonous snake is shaped like a spade.

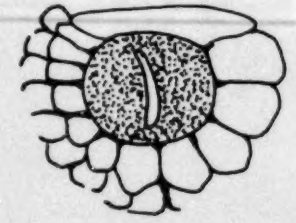
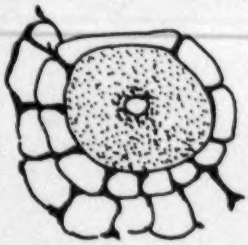
top view  side view 

- The head of a non-poisonous snake is streamlined, and is usually about the same diameter as its body.

top view  side view 

EYES

- Poisonous snakes have a vertical pupil in their eye-similar to the eye of a cat.
- Non-poisonous snakes have a round pupil.

poisonous  non-poisonous 

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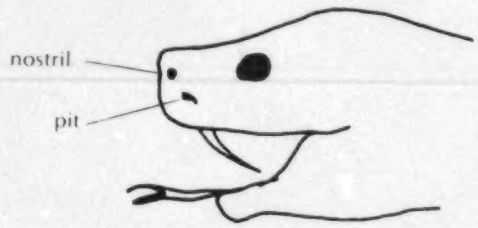
SNAKE FACTS

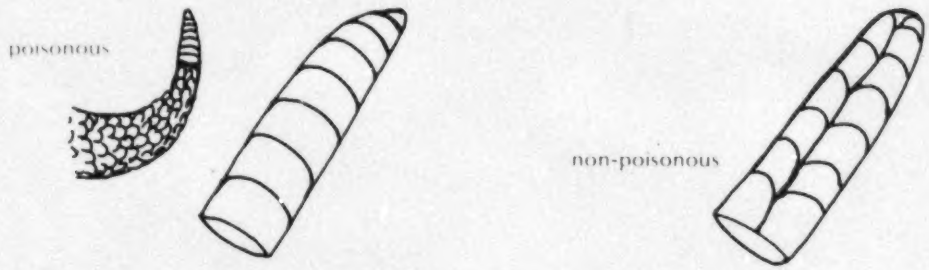
PITS

* Poisonous snakes are called pit vipers because of a pit located below their eyes. These pits are heat-sensing organs to help them locate warm-blooded prey.



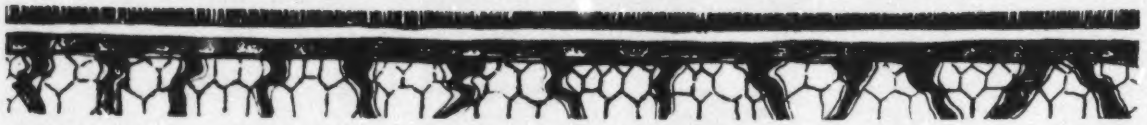
SCALES

* Poisonous snakes have a single row of scales on their belly-from their anal gland to the tip of their tails.
* Non-poisonous snakes have divided scales from the anal opening to the end of their tails.



IN CASE OF SNAKE BITE———

1. Try to identify the snake.
2. Have victim lie down, breathe slowly and relax.
3. Leave victim in resting position and run for help.
4. Most poisonous snake bites are rarely fatal. It is best *not* to attempt to suck out poison unless you have medical training and know proper procedure for making incisions.



SNAKE FACTS

KENTUCKY SNAKES *

BROWN SNAKES

Small, secretive, usually brown snakes but sometimes may be gray or reddish. They flatten their bodies when alarmed and also use anal scent glands when disturbed. In Kentucky we have: DeKays or the Northern Brown Snake, and the Red-bellied Snake.

CROWN AND BLACKHEADED SNAKES

These are very small snakes which burrow and eat insect larvae and centipedes. In Kentucky: Southeastern Crowned Snake.

EARTH SNAKES

Usually small gray, brown or reddish-brown snakes devoid of any distinct markings. They are highly secretive and seldom appear above ground. In Kentucky: Smooth Earth Snake and the Rough Earth Snake.

GARTER, RIBBON AND LINED SNAKES

Like the fancy garters that once supported mens socks, most of these snakes have long stripes running down their body. These snakes are very common and are found from coast to coast in the United States. In Kentucky: Plains Garter Snake, Eastern Ribbon Snake, Western Snake, Lined Snake and the Butler's Garter Snake.

GREEN SNAKES

These long, slender, and bright green snakes are usually found in trees and shrubs. As soon as they die they turn blue. In Kentucky we have the Rough Green Snake.

HOGNOSE SNAKES

These snakes exhibit extraordinary behavior when threatened. They flatten their heads, hiss loudly and produce a show of hostility. If the intruder fails to retreat the snake may roll over and pretend to be dead. In Kentucky: Eastern and Western Hognose.

KING SNAKES

These are shiny and powerful constrictor snakes. A constrictor snake suffocates its prey by squeezing it to death. King snakes amoung others kill and eat other snakes - even poisonous ones. In Kentucky: Eastern Kingsnake, Eastern Milksnake, Scarlet Kingsnake and the Prairie Kingsnake.

MUD SNAKES

These are large smooth scaled snakes. In Kentucky we have the Mud Snake. This snake feeds on eel-like salamanders and maneuvers prey into its mouth by pricking it with its stiff, sharp tail. **SEE FOOTNOTE.

PINE SNAKES

Good burrowers and chiefly diurnal snakes all are constrictor snakes. In Kentucky: Northern Pine Snake.

SNAKE FACTS

PIT VIPERS

These are poisonous snakes, named for a deep facial pit located between the eye and nostril. The pit is a heat sensory organ that helps these snakes locate their warm-blooded prey. In Kentucky: Northern and Southern Copperhead, Western Cottonmouth, Western Pigmy Rattlesnake and the Canebrake Rattlesnake.

RACERS AND WHIP SNAKES

Slender and fast snakes, they will vibrate the tips of their tails in dry brush to produce a buzzing sound like a rattler. In Kentucky: Eastern Coachwhip Snake and the Northern Black Racer.

RAT SNAKES

Good climbers, medium to large in size, these snakes have been known to literally stand up and fight when cornered. In Kentucky: Corn Snake, Black Rat Snake, and the Gray Rat Snake.

SCARLET SNAKES

This snake likes to burrow and closely resembles the venomous Coral Snake and the Scarlet Kingsnake. In Kentucky: Scarlet Snake.

WATER SNAKES

These snakes are semiaquatic, love to swim and can dive underwater to capture food like fish and salamanders. They flatten their bodies when alarmed and emit a foul smelling odor when handled. In Kentucky we have: the Banded Water Snake, Northern Water Snake, Kirtland's Water Snake,Graham's Water Snake, Green Water Snake, Red-bellied Water Snake, Queen Water Snake and the Diamondback Water Snake.

WOODLAND SNAKES

These are very secretive and small snakes which are usually discovered under decaying boards and logs. In Kentucky: Northern Ringneck Snake, Eastern Worm Snake, and Western Worm Snake.

•The above listed groups are found in Kentucky. There are several other groups found in the United States but established populations have not been officially recorded in out state. The sighting of an animal in the wild does not warrant classification of the animal as a native. If a mere sighting was accepted as significant of nativity, rock pythons, eastern diamondbacks, western diamondbacks, eastern coral snakes as well as many other kinds of snakes could be accepted as Kentucky natives. Individuals of different ages (adults and juveniles) must be recorded by competent persons over an extended period of time at a given site; and even then, the recordings must be backed by actual specimens.

••Different kinds of snakes that burrow or live in a habitat where traction is difficult (muddy ground, sandy soil, etc.) have a sharply pointed terminal scale at the end of their tail. These include along with the Mud Snake the Pine and Worm Snake.

SNAKE FACTS

WORD LIST

VERTEBRATES—ANIMALS WITH A SPINAL COLUMN AND AN INTERNAL SKELETON.

REPTILES—VERTEBRATES WHICH ARE COLD—BLOODED, ARE BORN WITH LUNGS AND WHOSE OUTSIDE COVERING IS OF SCALES OR HORNY PLATES...REPTILES INCLUDE THE TUATARA, LIZARDS, SNAKES, TURTLES AND CROCODILE FAMILIES.

HERPETOLOGIST—A PERSON WHO STUDIES REPTILES AND AMPHIBIANS.

VENOM— A POISON THAT IS FORMED IN SPECIAL GLANDS IN SOME ANIMALS AND INJECTED BY A BITE OR STING.

AMPHIBIANS—VERTEBRATES WHICH ARE COLD—BLOODED AND ARE BORN IN WATER WITH GILLS AND USUALLY DEVELOP LUNGS AS AN ADULT. AMPHIBIANS INCLUDE TOADS, FROGS AND SALAMANDERS.

SNAKES IN LEGEND AND ART

The snake has held a fascination among people the world over; in history and religion it has been depicted as a mysterious, fearful and immortal animal. It is considered immortal because it sheds it's skin, yet continues to live. A snake with it's tail in it's mouth, apparently swallowing itself is regarded as a symbol of eternity.

African cultures contain some very interesting tales concerning the snake. Geoffery Parrinder, in his book, African Mythology, describes some ancient African folklore about snakes in the following passages:

> When the world was created, say the Fon, the snake gathered the earth together with its coils and gave men a place in which to live. It still sustains the world and coils must not be loosened lest everything disintegrates. It is said that there are 3,500 snake coils above the earth and 3,500 below. In another version of the story the snake erected four pillars at each of the cardinal points to uphold the heavens, and it twisted itself round the pillars to keep them upright. The three primary colors of black, white and red are the clothes which the snake puts on at night, day and twilight, and these colors are twined round the heavenly pillars.

> The snake is essentially motion, the symbol of flowing movement. It is submerged in waters under the earth, dwelling the ocean and so representing the greatest power in unceasing movement. The coils of the snake are not still but revolve round the earth and seet the heavenly bodies in motion. . . . . In the beginning the snake found only stagnant water on earth, so he traced out courses for the streams and channels for rivers and thus the world received life. When the snake carried the Creator through the length and breadth of the world mountains appeared wherever they stopped.

A further version says that the snake was created first, and it carried the Creator everywhere in its mouth making the world as it is now. Each night when they stopped great mountains of the snake's excrement appeared, and so when men dig into mountains they find treasure. When the Creator had finished he saw that there were too many mountains, trees and large animals for the earth to carry. How could he stop the earth from sinking into the sea that surrounded it? He asked the snake to coil itself up with its tail in its mouth to support the earth. The snake became like the circular carrying pad that people put of their heads to support water pots or other weight.

Since the snake does not like heat the sea keeps him cool. God told some red monkeys, who live in the sea, to make iron bars for his food whenever he is hungry. Every so often the snake shifts his position a little and there is an earthquake. If the monkeys fail to feed him with iron the snake will be obliged to eat its own tail. When this happens the earth, weighed down with even more burdens that at the beginning, with more men and houses, will slide into the ocean, and that will be the end of the world.

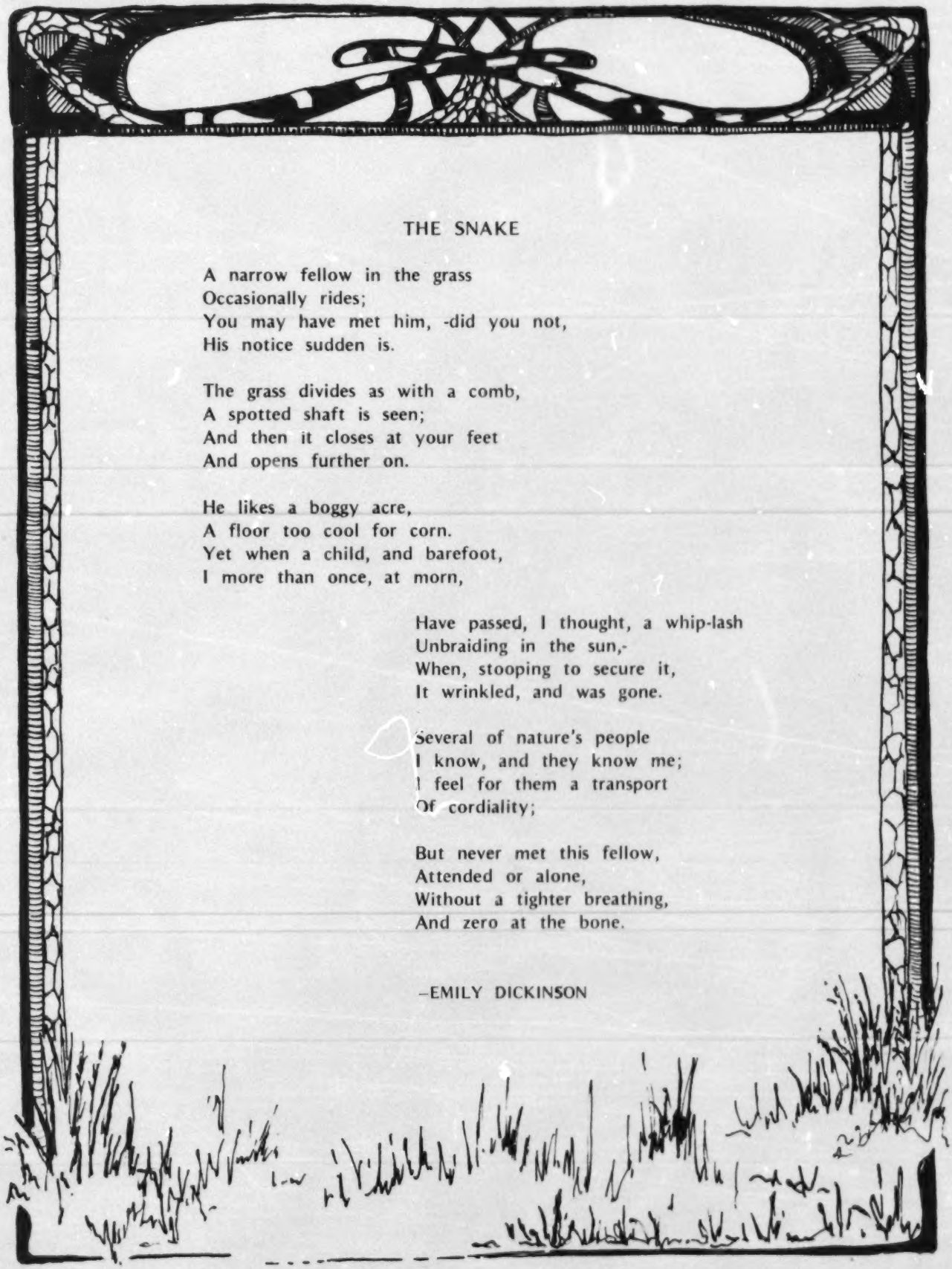
From Greek literature in the Aesop's Fables there is reference to snakes as animals of evil and deceit. The fable relates how a poor farmer found a snake in winter time, almost frozen to death. He took it to his house and warmed it in his bosom and on the hearth in front of the fireplace. As soon as the snake recovered, it rewarded it's rescuer by biting him. The farmer, dying, said, "I have suffered justly, for I took pity on the wicked".

ACTIVITY:

* Research other stories and legends about snakes. Look into Greek mythology, children's books, story of Genesis creation, etc.
* Start a collection of snake pictures, jewelry, symbols, etc. Look at architecture, logos, various designs, etc.
* Start a collection of snakes used as symbols.

REFERENCE:

Parrinder, Geoffery, African Mythology,
Hamlyn Publishers, London, England, 1967.



THE SNAKE

A narrow fellow in the grass
Occasionally rides;
You may have met him, -did you not,
His notice sudden is.

The grass divides as with a comb,
A spotted shaft is seen;
And then it closes at your feet
And opens further on.

He likes a boggy acre,
A floor too cool for corn.
Yet when a child, and barefoot,
I more than once, at morn,

Have passed, I thought, a whip-lash
Unbraiding in the sun,-
When, stooping to secure it,
It wrinkled, and was gone.

Several of nature's people
I know, and they know me;
I feel for them a transport
Of cordiality;

But never met this fellow,
Attended or alone,
Without a tighter breathing,
And zero at the bone.

–EMILY DICKINSON

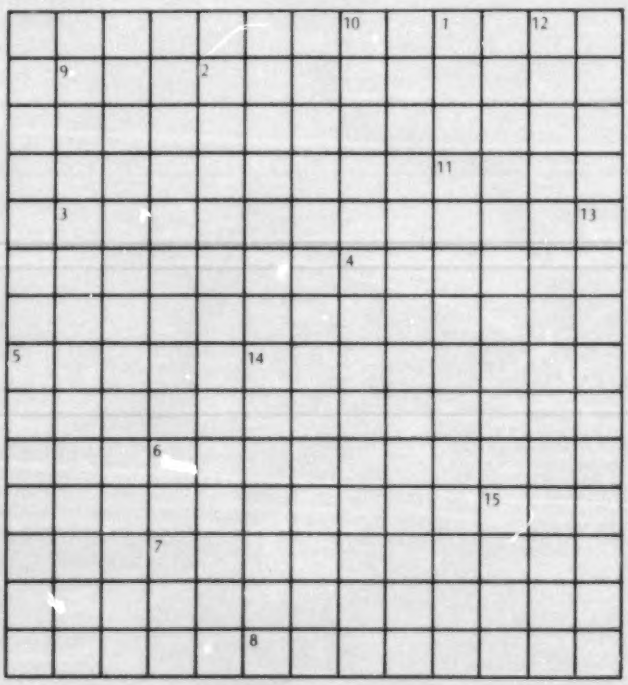
S-S-SNAKE CROSSWORD

ACROSS

1. Young copperheads and cottonmouths tails resemble a ____ .
2. Snake _____ can be fatal but it is also used to help fight disease.
3. ____ snakes can trap and hold several prey at one time.
4. These snakes are named for the sound they make. They are called ____ snakes.
5. The ___ snake plays "possum" when disturbed.
6. A snake is covered with ____ .
7. A snake _____ with it's tongue.
8. Snakes are easiest to find in the ____ season.

DOWN

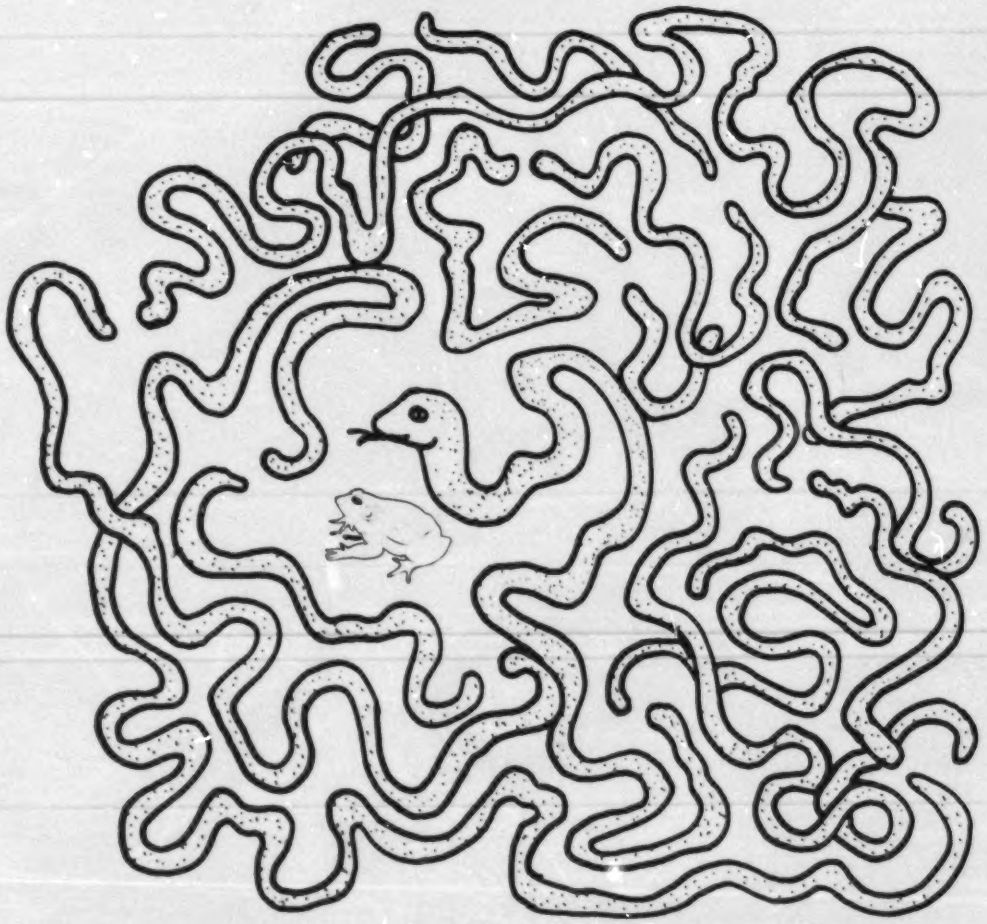
2. The slender, bright green ___ snake is found in shrubs and trees.
9. A person who studies reptiles and amphibians is called a ____ .
10. It's not a goldhead snake, but a ____ snake.
11. Not a woodmouth snake, but a ____ snake.
12. _____ -necked snake.
13. Another name for a snake is a ____ .
14. Poisonous snakes have a broad shaped head like a _____ .
15. It's not a queen snake, but a _____ snake.



ACTIVITIES

A-MAZING FROG

Help the frog get out of the maze of snake bodies and away to safety.



SNAKY STORIES

List as many words as possible that begin with the letter "s". After the list is complete write a story about a snake using as many words as possible that begin with s.

Example: The silent snake slept on a slippery rock.
The snake was soaking in the sun's rays when . . . .

FROG IN A BOG!
(played like red light, green light)

Someone in the group is the frog. The frog sits in front of the group. Everyone else is a snake. Starting about 50 yards back from the frog the snakes try to slither their way to capture the frog. The frog tells the snakes when to start by yelling go. The frog covers his/her eyes while the snakes begin to slither. The frog uncovers his eyes and yells "stop" whenever he wants. If the frog spots any snake movement when he yells stop and uncovers his eyes, that snake is out of the game. The first snake to reach the frog is the winner! Everyone takes turn being the frog.

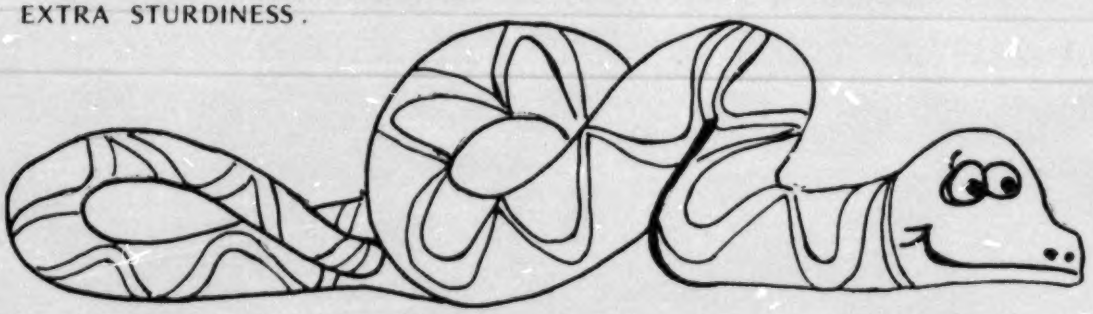
†Discuss various ways that snakes capture their prey. (Some snakes burrow for food, others lay and wait, some use heat sensing devices to follow and capture prey, others follow prey by scent.

†Look at the Snake Family Chart. Point-out the various characteristics of each of the snake groups.

†Discuss the snake's use of his tongue in picking-up scent particles from a trail and transferring them to the olfactory organ. Look-up the term Jacobson's Organ in reference to a snakes' smelling sense.

SNEAKY SNAKE

USING THE SNEAKY SNAKE FOR THE PATTERN, DUPLICATE IT FOR USE AS A BOOKMARKER OR MOBILE. GLUE IT TO LIGHT CARDBOARD FOR EXTRA STURDINESS.



SNAKE PATTERNS

ACTIVITY: Collect pictures, jewelry, art items, etc. of snakes. Many of our man-made patterns that are found in fabrics, baskets, weavings, wallpapers, bricklaying, floor tiles and embroidery are influenced by or are direct copies of snake patterns.

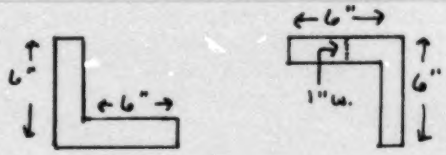
Materials Needed: drawing pencils, snake pictures and illustrations, cardboard finder.

ACTIVITIES

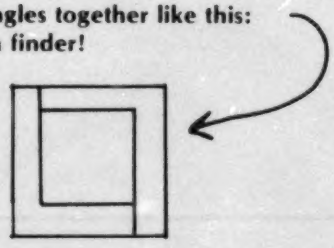
HOW TO MAKE A FINDER

Make a cardboard finder like the one below:

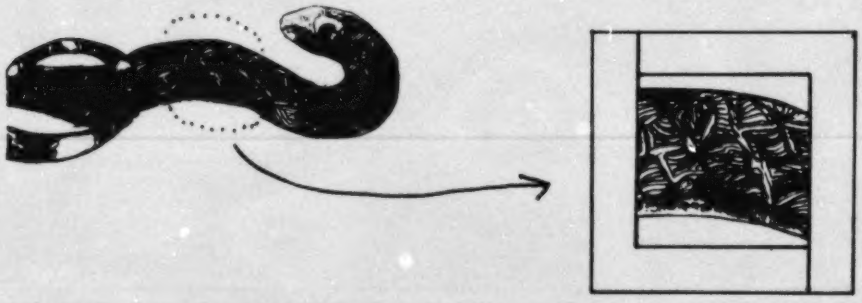
1. **Draw two right angles- 1" wide and 6" long as shown below.**



2. **Put your two angles together like this: You now have a finder!**



3. **Slide your finder over illustrations of snakes. Outline an area of the snake's skin pattern that interests you or reminds you of something else. Copy this section and incorporate the pattern into a drawing , using your imagination.**



•Activity suggested by Cheryl Sims Fister, art teacher-Fayette County Schools.

TEACHER NOTES:

We would like to share your ideas with teachers across Kentucky. Include any activities that you have developed as a part of SNAKES and we will put it in the next SNAKES publication when it is reprinted. You will be given credit for your ideas.

Your Name:
Your School:
School Address:
Zip Code:

SNAKES ACTIVITY

Return to :

Kelly Hubbard
Ky. Dept. of Fish and Wildlife Resources
No. 1 Game Farm Road
Frankfort, KY 40601

Western Snake
Lined Snake
Butler's Snake
Mud Snake
Eastern Coachwhip
Northern Black Racer
Smooth Earth Snake
Black Rat Snake
Gray Rat Snake
Eastern Kingsnake
Eastern Milksnake
Scarlet Kingsnake
Prairie Kingsnake
Northern Pine Snake
Scarlet Snake
Southern Crowned Snake
Northern and Southern Copperhead
Western Cottonmouth
Western Pigmy Rattlesnake
Canebreak Rattlesnake
Corn Snake
Rough Green Snake
Rough Earth Snake
Eastern Worm Snake
Northern Ringneck
Eastern and Western Hognose

Barbara Christensen

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